TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
2003P12200WO		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP2004/011490	13.10.2004	13.10.2003
International Patent Classification (IPC) or national classification and IPC		
F23R3/34, F23R3/36		
Applicant		
SIEMENS AKTIENGESELLSCHAFT		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 2 sheets, as follows:

      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/011490

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (Rule 12.3 and 23.1(b))

☐ publication of the international application (Rule 12.4)

☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1-10 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

nos. 4 (in part), 5-9, 13 (in part), 14-21 as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* 1-3, 4 (in part), 10-12, 13 (in part) received by this Authority on 09.06.2005 with letter of 24.05.2005

nos.* _____ received by this Authority on _____

☒ the drawings:

sheets 1/1 as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/011490

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-21	YES
	Claims		NO
Inventive step (IS)	Claims	1-21	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-21	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

1. Document EP-A2-1.010.945 (D1), which is considered the closest prior art, discloses a method for the combustion of fuel in the combustion chamber (12) of a gas turbine.

In that method, fuel and combustion air are mixed prior to entry into the combustion chamber (12), avoiding self-ignition (see D1, column 3, lines 8-11).

Furthermore, an enclosed vortex is generated in one or more cavities (40, 42) (see D1, § 9), thereby producing a circulation flow (see D1, figure 1), into which additional fuel is added (see D1, § 11). In addition, as the mixture is ignited in each cavity (see D1, column 5, lines 10 to 12), heating to ignition conditions is guaranteed.

The mixture from the pre-mixing stage (20) is introduced into the combustion chamber such that it mixes with a hot combustion gas flowing from the circulation flow, is heated and is combusted

until it exits from the combustion chamber (12) (see D1, column 5, lines 20 to 23).

Since there is sufficient interaction between the two mixtures (the main mixture from the pre-mixing stage and the circulation mixture from the cavity) to allow joint ignition and stabilisation (see US-A1-5.619.855, column 5, lines 49-52, and D1, column 2, lines 18-27), it is unavoidable that parts of each of the two mixtures become incorporated into the other mixture flow.

It is therefore implicitly disclosed that a first part of the main mixture is introduced into the combustion chamber (12) such that it circulates in the vortex flow.

This division of the main mixture is also illustrated in figure 1, in which arrows are used to represent the main mixture, a further arrow shows the flow into the combustion chamber (symbolises the so-called first part of the mixture) and a further arrow is directed into the cavity (symbolises the so-called second part of the mixture).

2. The subject matter of claim 1 differs from that known method in that the second part of the mixture is injected substantially perpendicularly to the flow direction of the flowing hot combustion gas from the circulation flow, mixes therewith, is heated and is combusted until it

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

exits from the combustion chamber.

3. The subject matter of claim 1 is thus novel (PCT Article 33(2)).

4. The current invention can be considered to address the problem of allowing the combustion gas flowing from the circulation flow to thoroughly mix with the first part of the mixture.

5. The features of the claim are neither disclosed nor suggested by the prior art.

6. The solution to the problem as proposed in claim 1 of the present application therefore involves an inventive step (PCT Article 33(3)).

7. In view of the above argument, the subject matter of independent claim 12 is also novel and inventive.

8. Claims 2-11 and 13-21 are dependent on claims 1 and 12 and therefore likewise meet the PCT requirements for novelty and inventive step.